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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/691,155	10/19/2000	Robert A. Hoffman	P-4744	4567

7590

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EXAMINER

GEISEL, KARA E

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 12/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/691,155

Applicant(s)

HOFFMAN ET AL.

Examiner

Kara E Geisel

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— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 14-25 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed on April 12th, 2001 has been fully considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 15-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto et al. (USPN 5,563,070).

In regards to claims 1 and 15, Yamamoto discloses an apparatus for examining a particle in a flow stream of a flow cytometer (fig. 13) comprising a light emitting device (fig. 13, 15) comprising one incoherent light emitting semiconductor device (column 6, lines 52-55 and 58-61; column 8, lines 21-23) adapted to emit light toward the flow stream (column 9, lines 50-53), and a detector (fig. 13, 17) adapted to detect light emanating from the particle in response to emitted light striking the particle (column 9, lines 50-53).

In regards to claims 2 and 16, the apparatus for examining a particle in a flow stream of a flow cytometer is discussed above. Furthermore, the incoherent light emitting semiconductor device (fig. 13, 15) is a light emitting diode (column 6 lines 52-61 and column 8, lines 21-23).

In regards to claims 3 and 17, the apparatus for examining a particle in a flow stream of a flow cytometer is discussed above. Furthermore, the emanating light comprises fluorescent light and the detector is adapted to detect fluorescent light (column 9, lines 46-55).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (USPN 5,563,070) in view of Unterleitner (USPN 4,498,766).

In regards to claims 4 and 18, the apparatus for examining a particle in a flow stream of a flow cytometer is discussed above. Yamamoto does not disclose two incoherent light emitting semiconductor devices.

Unterleitner discloses a flow cytometer with two exciting light sources (fig. 1, 14 and 12), which may be incoherent (column 4, lines 2-6). Two incoherent exciting light sources of different wavelengths are used so that it is possible to detect and monitor two different types of particles having different fluorescent characteristics (column 3, lines 42-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add another incoherent light emitting semiconductor device with a respective light emission to Yamamoto's flow cytometer and furthermore adapt the detectors to detect each light emanating from a particle in response to each emitted light in order to detect and monitor two different types of fluorescing particles.

Claims 5-10, and 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (USPN 5,563,070) in view of Kusuzawa (USPN 5,596,401).

In regards to claims 5-10 and 19-24, the apparatus for examining a particle in a flow stream of a flow cytometer is discussed above. Yamamoto does not disclose a second system for detecting the particle so that the first system can analyze the particle. However, this is well known in the art, and it would have been obvious to a person of ordinary skill in the art to add a second detection system in order to detect the particle, and control the first light source to image the particle once it has been detected.

For example, Kusuzawa discloses an apparatus for examining a particle in a flow stream of a flow cytometer. The apparatus includes a controller (fig. 1, 26) adapted to control the light-emitting device to emit light for a predetermined period, during which the emitted light radiates on the particle (column 8, lines 8-13). This controller is adapted to control the light-emitting device to emit light in pulses (column 5, lines 11-18). The apparatus further includes a second substantially coherent light-emitting device adapted to emit its light towards the flow stream (fig. 1, 8), which is a laser (column 7, lines 56-67 and column 8, lines 1-13). There is a second detector (fig. 1, 20 and 22) adapted to detect the second light emanating from the particle in response to the second emitted light striking the particle (column 7, 62-67). The controller is adapted to control the first light emitting device based on the detection of the second emanating light by the second detector (column 8, lines 8-17).

Claims 11-12, 14, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (USPN 5,563,070) in view of Hoffman et al. (USPN 5,528,045).

In regards to claims 11-12 and 25, the apparatus for examining a particle in a flow stream of a flow cytometer is discussed above. Yamamoto does not disclose a light-obstructing device with two transparent portions to allow portions of the emanating light from a particle to be detected.

Hoffman discloses an apparatus for detecting particles in a flow cytometer. The particles are tagged with multiple fluorochromes, which are excited at different locations in a flow cell by different excitation

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sources. A light-obstructing device (fig. 1, SPF), having a substantially opaque portion and two substantially transparent portions (Fig. 1, AP1 and AP2), is placed before a detector so that the emanating light from each fluorochrome attached to the particle can be discriminated and detected separately (column 2, lines 49-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add a light obstructing device with two substantially transparent portions into Yamamoto's apparatus in order to detect light from two different fluorochromes attached to a particle.

In regards to claim 14, combining a light-obstructing device with an apparatus for examining a particle in a flow stream of a flow cytometer is discussed above. Furthermore, the light-obstructing device is located at an image plane (Hoffman column 3, lines 1-5).

Allowable Subject Matter

Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

As to claim 13, the prior art of record, taken alone or in combination, fails to disclose or render obvious an apparatus for examining a particle in a flow stream of a flow cytometer, comprising an incoherent light emitting semiconductor device that emits light towards the flow stream, a detector that detects light emanating from the particle in response to emitted light striking the particle, and, placed in front of the detector, a light-obstructing device with an opaque portion to prevent a portion of the emanating light from being detected and two substantially transparent portions for allowing other portions of emanating light to be detected, wherein one transparent portion is larger than the other.

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art made of record is Pinsky et al. (USPN 5,317,162), Deka et al. (USPN 6,197,593), and Kosaka (Re. 35,868).

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Pinsky discloses a flow cytometer that uses an incoherent light source to fluoresce a particle in a flow stream, and detects multiple wavelengths of the fluorescence.

Deka discloses a flow cytometer that uses a light emitting diode as the light source that excites a particle in a flow stream to fluoresce.


Kosaka discloses a flow cytometer, which has a particle detection system, including a coherent light source, a fluorescence detector, and a controller to control a second light source to illuminate a particle for imaging, once the particle has been detected by the detection system. The second light source is incoherent.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kara E Geisel whose telephone number is 703 305 7182. The examiner can normally be reached on Monday through Thursday, 8am to 5pm and every other Friday 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 703 308 4881. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9318 for regular communications and 703 872 9319 for After Final communications. For inquiries of a general nature, the Customer Service fax number is 703 872 9317.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 1782.


F.L. Evans
Primary Examiner
Art Unit 2877

KEG

November 25, 2002